AMENDMENTS TO THE CLAIMS

On page 15, please replace the heading with the following rewritten heading:

WHAT IS CLAIMED IS:

Please cancel claims 1-27

Please add the following new claims 28-46.

28. (New) A method for producing mutant genes encoding an enzyme, the method comprising:

(a) introducing one or more mutations into a gene encoding an enzyme to form a plurality of mutated genes;

(b) providing the mutated genes to host microorganisms by inserting the mutated genes into vectors and transforming the microorganisms with the vectors;

(c) culturing the host microorganisms containing the vectors in the presence of a substrate for the enzyme under conditions suitable for activity of the enzyme such that a microorganism expressing a functional enzyme from a mutated gene has a detectable characteristic; and

(d) obtaining host microorganisms expressing a functional enzyme without selecting microorganisms on the basis of an altered or defined level of enzyme activity compared with a corresponding wild type enzyme.

29. (New) The method according to claim 28 further comprising:

(e) recovering the vectors from the host microorganisms expressing a functional enzyme.

30. (New) The method according to claim 28 further comprising:

(f) obtaining a combined pool of mutated genes encoding functional enzymes from the microorganisms in step (d) and repeating steps (a) to (d) to form a library of microorganisms containing a plurality of mutant genes expressing a functional enzyme.

31. (New) The method according to claim 30 further comprising:

(g) screening the library of microorganisms to obtain a mutant gene encoding a functional enzyme.

32. (New) The method according to claim 28 wherein step (a) is carried out by mis-incorporation mutagenesis using polymerase chain reaction (PCR) or gene shuffling.

33. (New) The method according to claim 28 wherein the vector is a plasmid or virus and the host microorganism is a bacterium.

34. (New) The method according to claim 33 wherein the bacterium is *Escherichia coli.*

35. (New) The method according to claim 33 wherein host microorganisms are cultured in a liquid medium.

36. (New) The method according to claim 28 wherein the detectable characteristic of the microorganism is derived from enzymatic action on the substrate.

37. (New) The method according to claim 36 wherein the enzyme can form a fluorometric or chromogenic phenotype or character in the host microorganism.

38. (New) The method according to claim 37 wherein the host microorganism is selected by changes in its spectral or fluorescence characteristics due to action of the enzyme on the substrate.

39. (New) The method according to claim 38 wherein the enzyme is capable of acting on an X-sugar or a fluorescein-linked sugar substrate.

40. (New) The method according to claim 39 wherein the substrate is an indoxyl-linked compound.

41. (New) The method according to claim 40 wherein the enzyme acting on an indoxyl-linked substrate is selected from the group consisting of glycosyl hydrolases, cellulases, beta-glucosidases, beta-galactosidases, mannosidases, xylanases, and beta-xylosidases.

42. (New) The method according to claim 41 wherein the enzyme is capable of acting on 5-Bromo-4-chloro-3-indolyl-D-galactopyranoside which forms a chromogen upon enzymatic hydrolysis.

43. (New) The method according to claim 28 wherein the enzyme substrate is retained on, or within the cell, in liquid culture.

44. (New) The method according to claim 28 wherein the host microorganisms are obtained by sorting by flow cytometry.

45. (New) A mutant gene capable of producing a functional enzyme produced by the method according to claim 28.

46. (New) A library of microorganisms comprising a plurality of vectors containing mutated genes encoding an enzyme produced by the method according to claim 28.